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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/602,467

06/23/2003

Venkat Selvamanickam

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EXAMINER

TALBOT, BRIAN K

ART UNIT

PAPER NUMBER

1792

MAIL DATE

DELIVERY MODE

11/30/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/602,467

Applicant(s)

SELVAMANICKAM ET AL.

Examiner

Brian K. Talbot

Art Unit

1792

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 9/24/07(RCE).
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 9/24/07 has been entered.
2. The amendment filed 9/24/07 has been considered and entered. Claims 1-11 remain in the application.
3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim Rejections - 35 USC § 103

5. Claims 1 and 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iijima et al. (5,650,378) or Iijima et al. (6,214,772) in combination with Savvides et al. (2004/0168636), Sioshansi et al. (5,236,509) or Maishev et al. (6,236,136) further in combination Slaughter et al. (6,783,637).

Iijima et al. (5,650,378) teaches a method of making polycrystalline thin film and superconducting oxide body. Coating superconductive materials by sputtering while irradiating the substrate base with ion beams at an oblique angle to the base. The oblique angle being 40-60 degrees (abstract). Iijima et al. (5,650,378) depicts an apparatus in Fig. 7 which details a take-up and wind-up roll (1) where upon a superconductive coating is applied to the substrate on the take-up and wind-up rolls. Figs. 3 and 8 further depict an ion beam generator (13) utilized to modify the coating applied (col. 6, line 60 – col. 8, line 55 and col. 9, line 50 – col. 10, line 30). The substrate can be a variety of materials (col. 2, lines 55-60). The ions are supplied by high frequency in which RF is included.

Iijima et al. (6,214,772) teaches a process of preparing polycrystalline thin film and apparatus therefrom. The superconductive film is applied by depositing coating material while contacting the substrate with ion beam bombardment at an angle of 50-60 degrees (abstract). Apparatus depicted in Fig. 3, which shows a take-up roll (24) and a wind-up roll (25) to supply the substrate to the coating area for deposition. Argon is utilized to sputter the coating material from target (36) and onto the substrate (A). Ions are supplied from (39) at an angle of 50-60

degrees preferably 55 degrees. Cryo-pump (52) is utilized to maintain the proper pressure for deposition. The ions are supplied by high frequency in which RF is included.

Iijima et al. (5,650,378) or Iijima et al. (6,214,772) fail to teach a dual RF-ion.

Savvides (2004/0168636) teaches a process and apparatus for producing crystalline thin film buffer layers and structures having biaxial texture. Looking at Fig. 6, a tape (72) travels from a supply roll to a take-up roll while sputtering sources (70) are supplying the superconductive material onto the tape. Ion guns (71) are supplied to assist the deposition. The sources (70) can also be formed by laser ablation [0060]-[0063]. The arrangement is housed in a vacuum chamber (43) as depicted in Fig. 3 (see also [0017] – [0020] and [0031]-[0036]). J_c – critical current can be in the range of 5×10^5 A/cm² and higher (example 10) and thickness of 100-500 nm.

Sioshansi et al. (5,236,509) a modular IBAD apparatus for continuous coating whereby separate modular IBAD stations are located next to one another in separated deposition zones (abstract and Figs. 4,8,10 and 14)

Maishev et al. (6,236,136) teaches a multiple-beam ion beam assembly whereby separate areas of the substrate are contacted with ion beams which can be separated from one another or have oblique angles which overlap one another (abstract and Figs. 1-5 and 8-10).

Therefore it would have been obvious for one skilled in the art at the time the invention was made to have modified Iijima et al. (5,650,378) or Iijima et al. (6,214,772) process by incorporating a dual RF-ion as evidenced by Savvides (2004/0168636), Sioshansi et al. (5,236,509) or Maishev et al. (6,236,136) to obtain the desired advantages associated therewith, i.e. broader coverage thereby reducing throughput.

Iijima et al. (5,650,378) or Iijima et al. (6,214,772) in combination with Savvides et al. (2004/0168636), Sioshansi et al. (5,236,509) or Maishev et al. (6,236,136) fail to teach a separator between the two ion sources.

Slaughter et al. (6,783,637) teaches the use of shields to prevent contamination of ions/atoms in a dual ion beam deposition apparatus (Fig 3 and col. 7, lines 4-38).

Therefore it would have been obvious for one skilled in the art at the time the invention was made to have modified Iijima et al. (5,650,378) or Iijima et al. (6,214,772) in combination with Savvides et al. (2004/0168636), Sioshansi et al. (5,236,509) or Maishev et al. (6,236,136) dual ion beam apparatus/process to include shields to prevent stray ions from contaminating the substrate as evidenced by Slaughter et al. (6,783,637).

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Iijima et al. (5,650,378) or Iijima et al. (6,214,772) in combination with Savvides (2004/0168636), Sioshansi et al. (5,236,509) and Maishev et al. (6,236,136) further in combination with Slaughter et al. (6,783,637) still further in combination with Fritzemeier et al. (6,797,313).

Iijima et al. (5,650,378) or Iijima et al. (6,214,772) in combination with Savvides (2004/0168636), Sioshansi et al. (5,236,509) and Maishev et al. (6,236,136) in combination with Slaughter et al. (6,783,637) fail to teach the take-up and wind-up rolls being outside the coating chamber.

Fritzemeier et al. (6,797,313) depicts a superconducting coating applied to a tape substrate whereby take-up roll (130) and wind-up roll (140) are located outside the coating chamber.

Therefore, it would have been obvious for one skilled in the art at the time the invention was made to have modified Iijima et al. (5,650,378) or Iijima et al. (6,214,772) in combination with Savvides (2004/0168636), Sioshansi et al. (5,236,509) and Maishev et al. (6,236,136) in combination with Slaughter et al. (6,783,637) process by locating the take-up and wind-up rolls outside the deposition chamber as evidenced by Fritzemeier et al. (6,797,313) with the expectation of achieving similar results.

Claims 3-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iijima et al. (5,650,378) or Iijima et al. (6,214,772) Iijima et al. (5,650,378) in combination with Savvides (2004/0168636), Sioshansi et al. (5,236,509) and Maishev et al. (6,236,136) in combination with Slaughter et al. (6,783,637) fail to teach a Kapton substrate and coating more than one substrate simultaneously.

While the Examiner acknowledges this fact, it is the Examiner's position that the type of substrate would be a matter of design choice and would be dependent upon the desired final product. In addition, the references teach a wide variety of substrates and hence, one skilled in the art would have had a reasonable expectation of achieving similar success regardless of the type of substrate utilized. With respect to coating more than one substrate simultaneously, it has been well settled that the mere duplication of parts has been held to be obvious *In Re Harza* 124 USPQ 378.

Response to Amendment

6. Applicant's arguments filed 9/24/07 have been fully considered but they are not persuasive.

Applicant argued that the prior art fails to teach a separator orientated along a direction that longitudinally bisects the substrate and functioning to barricade impingement of ions from the first ion source on the second portion and barricading impingement of ions from the second ion source on the first portion and the significance of the separator to prevent stray ions from contacting the substrate.

Regarding the separator, Slaughter et al. (6,783,637) teaches this limitation as using masks to prevent stray ions/atoms from contamination of the substrate. While this may be done with the sputtering material and not specifically for the ion, it generally teaches the broad concept of using masks (separators) to prevent unwanted stray ions/atoms from contacting. Furthermore, Maishev et al. (6,236,136) depicts "sections separating the ion sources" which can broadly read upon the claimed separator (see Figs. 1,3 and 5) while Sioshansi et al. (5,236,509) teaches separate modular IBAD stations located next to one another in separated deposition zones (abstract and Figs. 4,8,10 and 14). Separate zones would function equivalent to the claimed separator (whether inside or outside the chamber) as the ion would not impinge on the substrate outside the zone.


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7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian K. Talbot whose telephone number is (571) 272-1428. The examiner can normally be reached on Monday-Friday 6AM-3PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy H. Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

 11/27/07
Brian K Talbot
Primary Examiner
Art Unit 1762

BKT